

a first electromagnetic actuator that drives said second stage with a second thrust in said second direction with respect to said first stage; and

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(concluded)
a second electromagnetic actuator that is different from said first electromagnetic actuator to drive said second stage with a first thrust in said first direction with respect to said first stage, said first thrust being different from said second thrust;

said second stage is a guideless stage having no associated guide member, other than said first and second electromagnetic actuators, to guide movement of said second stage in the first and second directions.

REMARKS

Claims 26-94 and 97-104 are pending. By this Amendment, claim 38 is amended. The attached Appendix includes a marked-up copy of the amended claim (37 C.F.R. §1.121(c)(1)(ii)).

Claim 38 is amended to overcome the rejections of that claim under 35 U.S.C. §112, first paragraph and 35 U.S.C. §103(a), as will be discussed below.

The Examiner is requested to consider the information submitted with the attached Information Disclosure Statement.

Applicant thanks Examiner Kim for the courtesies extended to Applicant's undersigned attorney at the March 12 personal interview. The above amendments to claim 38 were discussed at the March 12 interview, and Applicant's arguments regarding those amendments are set forth in more detail below.

Applicant notes with appreciation the allowance of claims 26-37, 54-94 and 97-104. Applicant also notes with appreciation the indication of allowable subject matter in dependent claims 43 and 44. Applicant respectfully submits that all pending claims are in condition for allowance as detailed below.

Claims 38-45 stand rejected under 35 U.S.C. §112, first paragraph. This rejection is respectfully traversed.

The Office Action rejects independent claim 38, asserting that the specification does not support a guideless stage having no associated guide member because portions of the electromagnetic actuator "seems to also function as a guide...." Applicant respectfully submits that this rejection is overcome by amending claim 38 to recite that "said second stage is a guideless stage having no associated guide member, other than said first and second electromagnetic actuators, to guide movement of said second stage in the first and second directions." This is clearly supported by the fine adjustment stage 8 of the specification. Contrast the fine adjustment stage 8 with the scanning stage 9, which includes linear guides 34A, 34B that are separate from the linear motors 31A and 31B, which drive the scanning stage (see application Fig. 5). The fine adjustment stage 8 has no guides separate from the linear motors that drive the fine adjustment stage. Withdrawal of this rejection is requested.

Claims 38-42 and 45-53 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,477,304 to Nishi in view of U.S. Patent No. 4,916,340 to Negishi. This rejection is respectfully traversed.

Independent claim 38 has been amended to recite a base that supports the first and second stages, and a position detector having an interferometer that cooperates with a reflective portion of the second stage, the interferometer being supported by the base. Such amendments are supported by the specification, and thus do not constitute new matter. See, for example, Figs. 5 and 6, which show interferometers 47A, 47B and 50 supported by base 10, which also supports the first and second stages 8 and 9.

Applicant respectfully submits that neither Nishi nor Negishi discloses or suggests an interferometer that is supported by a base which also supports the claimed first and second

stages. Accordingly, independent claim 38 and its dependent claims are patentable over Nishi and Negishi.

Regarding independent claim 46, Applicant respectfully submits that the combination of Nishi and Negishi does not disclose or suggest what is recited in independent claim 46. That is, these references do not disclose or suggest the combination of, *inter alia*, (1) a scanning stage that is movable in a scanning direction on a base, (2) a fine adjustment stage that is movable within predetermined ranges in the scanning direction and in a direction perpendicular to the scanning direction, and on which an object is mounted, (3) actuators arranged in the scanning direction and in the direction perpendicular to the scanning direction to drive the fine adjustment stage, and (4) a cooling unit that cools the actuators by circulating a predetermined cooling fluid from the actuators arranged in the direction perpendicular to the scanning direction with respect to the scanning stage. As acknowledged in the Office Action, Nishi, which is the only one of the two applied references that teaches a scanning stage and a fine adjustment stage, does not disclose or suggest providing any structure to cool the actuators of the fine adjustment stage. Applicant respectfully submits that Negishi does not overcome the short comings of Nishi, and does not disclose or suggest modifying Nishi to provide a cooling unit for the actuators of the fine adjustment stage, because, *inter alia*, Negishi does not have a fine adjustment stage and a scanning stage. Negishi does not disclose a scanning exposure apparatus, and thus does not disclose or suggest a scanning stage. Furthermore, there is no fine adjustment stage in Negishi. Negishi merely discloses a stage 11 that is movable in X and Y directions.

Accordingly, there is no suggestion from Negishi to modify the apparatus of Nishi to provide a cooling unit for the fine adjustment stage actuators. Nishi does not provide cooling units for its fine adjustment stage actuators in spite of the fact that Nishi cools the linear motors that drive the scanning stage. Thus, the only reference that discloses the combination

of a scanning stage and a fine adjustment stage, i.e., Nishi, does not suggest what is recited in claim 46 of this application. Applicant respectfully submits that the Office Action uses impermissible hindsight in reaching its conclusion of obviousness regarding claim 46. Withdrawal of the rejection of claim 46 and its dependent claims is requested.

In view of the foregoing, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number set forth below.

Respectfully submitted,



Mario A. Costantino
Registration No. 33,565

MAC/ccs

Attachments:

Appendix
Petition for Extension of Time
Information Disclosure Statement

Date: March 21, 2003

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>

APPENDIX

Changes to Claims:

The following is a marked-up version of the amended claims:

38. (Four Times Amended) A stage apparatus comprising:

a first stage that is movable linearly in a first direction;

a second stage that is movable in said first direction and in a second direction perpendicular to said first direction with respect to said first stage, ~~said second stage is a guideless stage having no associated guide member to guide its movement;~~

a base that supports said first stage and said second stage;

a position detector having an interferometer that cooperates with a reflective portion of said second stage, said interferometer being supported by said base;

a first electromagnetic actuator that drives said second stage with a second thrust in said second direction with respect to said first stage; and

a second electromagnetic actuator that is different from said first electromagnetic actuator to drive said second stage with a first thrust in said first direction with respect to said first stage, said first thrust being different from said second thrust;

said second stage is a guideless stage having no associated guide member, other than said first and second electromagnetic actuators, to guide movement of said second stage in the first and second directions.